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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/043,934 | 01/11/2002 | Thomas S. Brima | 122835.8 | 9375 |

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BUCHANAN INGERSOLL PC
1835 MARKET STREET, 14TH FLOOR
PHILADELPHIA, PA 19103-2985

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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1714

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,934

Applicant(s)

BRIMA ET AL.

Examiner

Katarzyna Wyrozebski

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 52-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

In view of applicant's amendment, following final office action is necessitated. In the response the applicants have cancelled claims 1-51 and incorporated new claims 52-89.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 52-89 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to newly added claims 52-89, the limitation as incorporated into the claims does not have support in the specification for following reasons:

On page 3 of the specification, the applicants clearly stated that the clay component is exfoliated before it is incorporated into the matrix polymer. The same is stated in paragraph 15 on page 4 of the specification. Newly added present claims require that the clay be exfoliated once it is incorporated into the molten polymer by evaporation of the solvent.

In view of the cancellation of claims 1-51 the prior art of record is no longer applicable. Furthermore, in the event that the applicant successfully traverses new matter rejection stated above, new prior art is applied as follows. Since new prior art of applied applicant's arguments concerning rejection of cancelled claims is considered moot.

Claim Objections

3. Claim 58, 72 and 85 are objected to because of the following informalities: Claims 58, 72 and 85 recite nylon as one of the polymers utilized in the nanocomposite of the present invention. Nylon is actually a tradename and use of tradenames is not proper, since discontinuation of the production of such polymer would render the present claims invalid. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 52, 53, 58, 59, 63-65, 67 are rejected under 35 U.S.C. 102(b) as being anticipated by BEALL (US 5,760,121).

The prior art of BEAL discloses process for making nanocomposite, wherein the layered silicate such as clay or mica is intercalated with intercalant polymer and solvent (See Abstract, and col. 11, lines 15-25). Solvent can be water (see examples) or organic solvent (col. 10, lines 52-54). One example is ethanol (col. 10, line 1).

The intercalated clay is then utilized with matrix polymers that have to be melt processible. Such polymers include polyethylene terephthalate, polypropylene, polycarbonate, acrylonitrile polymers and the like (col. 20) as well as vulcanizable rubbers (col. 21) and thermosetting resins.

The clay component and melted polymer are combined together in an extruder, and since the water has lower boiling point than, for example, polypropylene or PET, any left amount will inherently be evaporated. The process of BEAL results in exfoliation of clay in a matrix polymer.

In the light of the above disclosure the prior art of BEAL anticipates requirements of claims rejected above.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 60-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over BEAL (US 5,760,121) in view of INOUE (US 0 804 659).

The discussion of the disclosure of the prior art of BEAL from paragraph 3 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of BEAL is recitation of modified polypropylene.

With respect to the above difference INOUE discloses polypropylene nanocomposites, wherein the polypropylene is modified with glycidyl acrylate and maleic anhydride.

Polypropylene alone does not have any functionalities and therefore is not very compatible with the clay component. Incorporating functionalities such as anhydride or epoxy renders them reactive towards clay component.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize modified polypropylene and therefore obtain compatible nanocomposite composition with clay dispersed within polymeric matrix.

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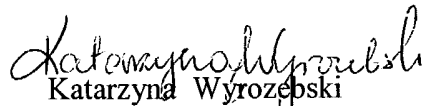
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Katarzyna Wyrozebski
Primary Examiner
Art Unit 1714

May 12, 2004